



Sandhill Crane

Grus canadensis

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GENERAL RANGE AND WASHINGTON DISTRIBUTION

The breeding range of the sandhill crane (*Grus canadensis*) includes Siberia, Alaska and Northern Canada, the Great Lakes, and portions of Idaho, Washington, Oregon, Nevada, and California. It also includes the southeastern United States, Cuba, and the Isle of Pines (Tacha et al. 1992). Six migratory populations with distinct wintering areas are recognized. These are the Lower Colorado River, Central Valley, Rocky Mountain, Pacific Flyway, Mid-continent, and Eastern populations. Three additional populations breeding in the southeastern United States and Cuba are nonmigratory (Tacha et al. 1994). Cranes breeding in Washington belong to the Central Valley population and winter in the Central Valley of California (Kramer et al. 1983, Pogson and Lindstedt 1991). This was most recently confirmed when 2 colts banded at Conboy Lake National Wildlife Refuge (NWR) in June 1996 were sighted again near Glenn, California, in January of 1997 (J. D. Engler, personal communication). Migrants moving through Washington belong to both the Central Valley and Pacific Flyway populations.

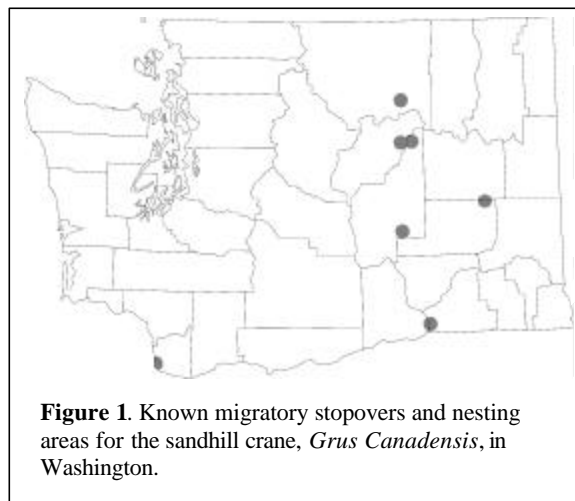


Figure 1. Known migratory stopovers and nesting areas for the sandhill crane, *Grus Canadensis*, in Washington.

Of the 6 recognized subspecies of sandhill cranes, only the greater sandhill crane (*Grus canadensis tabida*) breeds in Washington. According to Jewett et al. (1953), the breeding range was formerly more widespread in Washington and occurred both east and west of the Cascade crest. Historic eastern Washington locales included Okanogan, Collville, Spokane, Prescott, Rockland, Cashmere, Fort Simcoe, and Camas Prairie. Fewer historic western Washington breeding sites are known. Cooper and Suckley (1860) reported sandhill cranes breeding on interior prairies of western Washington, though their most specific location description was "on prairies near Steilacoom." They also reported that sandhill cranes were very abundant on the south Puget Sound prairies during autumn migration.

Between 1975 and 1987, a single pair of sandhill cranes nested at Conboy Lake NWR in Klickitat County (see Figure 1). Since 1988, 2 to 6 pairs/year are known to have nested on the refuge, and in 1996 there were 9 confirmed breeding pairs (Anderson et al. 1996). Nesting cranes were discovered recently at a second site in Washington on the Yakama Indian Reservation in Yakima County, where 1 pair nested in 1994 and 1995, and 2 pairs nested in 1996 (Leach 1995; R. Leach, personal communication).

Migrants of 2 other subspecies, the lesser sandhill crane (*G. c. canadensis*) and the Canadian sandhill crane (*G. c. rowani*), occur in Washington during spring and fall. The largest concentrations are found in the central Columbia Basin. In the spring, lesser sandhills migrating to northwest Canada and Alaska enter Washington east of the Cascades south of Pasco. They regularly stop near Moses Lake and Ephrata in Grant County, and near Mansfield in Douglas County before continuing north through the Okanogan Valley (see Figure 1; Littlefield and Thompson 1981, Kramer et al. 1983). Lesser sandhill cranes migrating west of the Cascades enter the state near Sauvie Island in the Columbia River, and either move north through the Puget Sound region or follow the coast, passing over Cape Flattery toward Vancouver, British Columbia. The same routes are used in the fall (Littlefield and Thompson 1981). Migrating greater sandhill cranes that breed in British Columbia and Canada probably use similar routes.

Breeding sandhill cranes arrive at Conboy Lake NWR in early March. Most nesting occurs from April to June, though a newly hatched colt has been observed as late as early July (H. Cole, personal communication). Breeding cranes and their surviving young leave the state between late September and mid-October.

RATIONALE

The sandhill crane is a State Endangered species. Sandhill cranes are in jeopardy of extinction in Washington because of their limited distribution, low numbers, poor breeding success and colt survival, and loss of shallow marshes or wet meadows for feeding and nesting (Safina 1993). In addition, a large percentage of their wintering habitat is privately owned and subject to potential alteration (Lewis 1980, Pogson and Lindstedt 1991).

HABITAT REQUIREMENTS

Sandhill cranes use large and small tracts of open habitat where visibility is good from all vantage points. Wet meadows, marshes, shallow ponds, hayfields, and grainfields are all favored for nesting, feeding, and roosting. Emergent wetland vegetation is a key component of nesting territories, and nests are typically placed on piles of emergent vegetation, grass, and mud (Safina 1993, Baker et al. 1995). At Conboy Lake NWR, nesting usually takes place in shallow-water marshes with dense emergent plant cover, including reed canarygrass (*Phalaris arundinacea*) and rushes (*Juncus* spp). Bulrushes (*Scirpus* spp.) are often used for nesting in southeastern Oregon (Littlefield and Ryder 1968), but such vegetation is not common at Conboy Lake NWR. Pairs return to the same territory and even the same approximate nest location every year (Littlefield and Ryder 1968, Walkinshaw 1989).

Sandhill cranes are omnivorous, feeding on grains, plant material, invertebrates, amphibians, and small mammals (Reinecke and Krapu 1986, Tacha et al. 1992, Davis and Vohs 1993). Wet meadows or grasslands are used as feeding grounds and are sometimes used for nesting (U.S. Fish and Wildlife Service 1978, Littlefield 1995a). Grainfields and pastures are also important feeding areas (Littlefield and Ryder 1968). Wet meadow or marsh habitats used by sandhill cranes in Washington occur in forested areas (predominantly lodgepole pine [*Pinus contorta*], Douglas-fir [*Pseudotsuga menziesii*], ponderosa pine [*Pinus ponderosa*], and/or grand fir [*Abies grandis*]), and in more open conditions where they are surrounded by grasslands, shrublands, and/or agricultural lands (Tacha et al. 1992).

LIMITING FACTORS

Sandhill cranes are limited by the availability of large tracts of undisturbed marshes or meadows for feeding and nesting, and by adequate water levels during the nesting period (Safina 1993). Low nesting success and colt survival, with subsequent low annual recruitment of new birds into the population can result in a decline of breeding pairs over time (Stern et al. 1985, Stevens 1991, Littlefield 1995b,c).

Sandhill cranes are extremely wary, requiring isolated sites with good nesting cover. Repeated disturbance often results in nest desertion and increases the likelihood of predation on unattended nests (Safina 1993). Pedestrian and vehicle traffic, construction, timber harvest, and low-flying aircraft can potentially disturb breeding and roosting

cranes (Kramer et al. 1983, Norling et al. 1992, Joe Engler, personal communication). Additionally, structures such as power lines and wire fences can pose hazards to cranes that may collide with or become entangled in the wires (U.S. Fish and Wildlife Service 1978, Kramer et al. 1983, Walkinshaw 1989, Morkill and Anderson 1991, Brown and Drewien 1995).

Predator populations near sandhill crane nesting areas can seriously hamper nesting success (Stern et al. 1985). Losses of eggs and chicks to predators have greatly impacted crane numbers on the Malheur National Wildlife Refuge in Oregon (Littlefield 1995b,c). Coyotes (*Canis latrans*) are the most serious predator, followed by ravens (*Corvus corax*), raccoons (*Procyon lotor*), and mink (*Mustela vison*). A combination of habitat improvement (increasing non-woody vegetative cover) and predator control has been highly successful in increasing the breeding crane population on the Malheur National Wildlife Refuge (Littlefield 1995b,c).

Livestock can also cause problems for nesting sandhill cranes. Grazing reduces vegetative cover for nests which can result in increased nest depredation (Braun et al. 1975, Littlefield and Paullin 1990, Littlefield 1995b). Eggs and young are also at risk of being trampled by cattle where spring and summer grazing is allowed (Schlorff et al. 1983). Cattle trails into emergent wetlands provide easy access for mammalian predators, and habitat deterioration from mowing or grazing reduces the small mammal populations that are the favored prey of predators. This leaves predators more likely to feed on alternative prey such as crane eggs and chicks. In addition, cattle crush emergent vegetation while using it for bedding in winter, resulting in decreased cover for crane nests in April and May (Littlefield and Paullin 1990).

Nesting areas must have water shallow enough to support emergent vegetation. Cranes prefer to roost in water less than about 20 cm (8 in) deep (Lovvorn and Kirkpatrick 1981, Norling et al. 1992). Increasing water depth can flood and destroy nests, while lowering water levels can improve predator access to nests. Decreased water levels in June and July can cause a shortage of moist soil and aquatic invertebrates required by young cranes during their first 6 weeks of life, resulting in their starvation (Schlorff et al. 1983).

MANAGEMENT RECOMMENDATIONS

In order for sandhill cranes to survive in Washington, their breeding, migration, and wintering habitats need to be protected and enhanced. It is crucial that further losses of Washington's remaining wetlands are prevented. In some instances, the creation of additional habitat should be considered (Safina 1993, Tacha et al. 1994).

Disturbing cranes during the breeding season (March to September) should be avoided. Road and foot travel should be avoided within 400 m (1,312 ft) of nests, and logging operations within 800 m (2,625 ft) of crane nests should be curtailed during the breeding season (Schlorff et al. 1983). Avoid aircraft activity or keep to high altitudes over areas used by cranes (Kramer et al. 1983). In addition, construction and development within 1.2 km (0.75 mi) of nest sites should be avoided (Joe Engler, personal communication).

New power line corridors should be located away from crane migration and breeding sites, or buried underground. Line markers or other devices should be installed on existing transmission lines that pose hazards to cranes (Kramer et al. 1983, Morkill and Anderson 1991, Brown and Drewien 1995).

All fences that are not essential to controlled grazing and that are near areas used by sandhill cranes, should be removed to prevent cranes from becoming entangled in fence wires (U.S. Fish and Wildlife Service 1978, Walkinshaw 1989).

Predator populations may need to be controlled around nesting areas. A combination of habitat improvement (increasing non-woody vegetative cover) and predator control has been shown to be effective (Littlefield 1995b,c).

Livestock grazing at sandhill crane breeding sites should be limited or eliminated. Grazing and cattle trails reduce vegetative cover for crane nests, increase predator access, and increase the risk of crane eggs and young being trampled by livestock (Braun et al. 1975, Schlorff et al. 1983, Littlefield and Paullin 1990, Littlefield 1995b).

Changes in water levels should be avoided while sandhill cranes are nesting. New water projects such as dams or irrigation ditches that would alter water levels and cause negative changes to vegetation should be avoided in important crane breeding or migration areas (Schlorff et al. 1983).

Meadows should be mowed and hayed no earlier than mid-August to prevent mortality of flightless young cranes hiding in the tall vegetation (Schlorff 1983). Detailed knowledge of a given year's nesting chronology, or of when particular foraging sites are used, could allow for timing flexibility.

Mowing and hay removal conducted after 15 August may benefit cranes by providing feeding areas. All hay should be removed and residual hay cleaned up immediately after mowing to prevent mold development. "Moldy" hay provides favorable conditions for aspergillosis, which is known to infect young cranes (U.S. Fish and Wildlife Service 1978).

Fall plowing of crane feeding habitat should be avoided. Waste grain is more useful if knocked over rather than left standing (Johnson and Stewart 1972). Wheat is the preferred grain to attract cranes to a feeding site, though barley and corn are favored as well (Littlefield 1986, Sugden et al. 1988).

U.S. Fish and Wildlife Service guidelines for managing greater sandhill cranes of the Central Valley population suggest maintaining ponds and wetlands within 3.2 km (2 mi) of grain sites to provide roost sites for cranes (U.S. Fish and Wildlife Service 1978). In Saskatchewan, Canada, 90% of sandhill cranes foraged in fields within 8.0 km (5.0 mi) of their night roost sites, and observations of cranes decreased with distance from roost centers (Sugden et al. 1988). On the Malheur National Wildlife Refuge in southeast Oregon, all grainfields are within 7.6 km (4.7 mi) of night roosts (Littlefield 1986).

New construction or traffic increases within 800 m (2,625 ft) of feeding areas should be avoided. Additionally, low flying aircraft should be avoided over areas used by cranes (Kramer et al. 1983).

The construction of roads and buildings within 500 m (1,640 ft) of known night roost locations should be avoided. Preferred night roost sites used during migration are usually located away from paved or gravel roads, single dwellings, and bridges (Norling et al. 1992).

Hunting activity should be avoided near established roosts, or restricted to 4 hours after sunrise until 2 hours before sunset. Hunting should also be avoided near major feeding areas (Lovvorn and Kirkpatrick 1981, Littlefield 1986).

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KEY POINTS

Habitat Requirements

- Sandhill cranes use large and small tracts of open habitat where visibility is good from all vantage points.
- Wet meadows, marshes, shallow ponds, pastures, hayfields, and grainfields are all used for nesting, feeding, and/or roosting.
- Dense, emergent wetland vegetation is a key component of nesting territories. Nests are typically placed on piles of emergent vegetation, grass, and mud.
- Ideal nesting locations have good visibility, are near feeding areas, and are free from human disturbance.
- Migrating sandhill cranes use roost sites with shallow water (<20.0 cm [8.0 in]) deep that are close to feeding sites and are free from human disturbance.
- Sandhill cranes are highly omnivorous, feeding on grains, plant material, invertebrates, amphibians, and small mammals.

Management Recommendations

- Sandhill cranes should not be disturbed during their breeding season (March - September).
- Vehicle and foot traffic should be avoided within 400 m (1,312 ft) of nesting areas during the breeding period (March - September).
- Logging should be avoided within 800 m (2,625 ft) of nests during the breeding period.
- Aviation balls or other markers should be used to make existing transmission lines visible to flying cranes.
- Avoid building new power lines in areas used by cranes, or place lines underground.
- All unnecessary wire fences should be removed from areas used by cranes.
- Cattle should be excluded from crane nesting marshes.
- Predator control may be necessary in some situations.
- Water levels should not be altered in wetlands used by cranes. New water projects that might alter water levels or change vegetation should be avoided in nesting or migration areas.
- Meadows should be mowed after 15 August, and all hay should be removed soon after mowing to prevent mold.
- Grainfields should not be fall-plowed; waste grain should be knocked down.
- Wetlands should be maintained within 3 km (2 mi) of upland feeding areas.
- Construction and road building should be avoided within 800 m (2,625 ft) of feeding areas.
- The construction of new roads or buildings should be avoided within 500 m (1,640 ft) of night roosts.
- Hunting near roosts should be avoided, or restricted from 4 hours after sunrise until 2 hours before sunset.